

REMARKS

Claims 1-36, all the claims pending in the application, are rejected. Claims 1, 5, 9, 22-24, 26 and 27 are objected to. Claims 1, 5-9, 22-27 and 29-33 are amended. Claims 28, 34 and 36 are cancelled.

Support for Amendments

The amendments are made in accordance with the Examiner's suggestions and track language already existing in the claims.

Claim Objections

Claim 1 is objected to because the Examiner believes that the phrase "the semiconductive layer" in Line 3 should read "the organic semiconductive layer" and the phrase "the gate dielectric layer" in Line 4 should read "the organic gate dielectric layer". Appropriate correction has been made.

Claim 5 is objected to because the Examiner believes that the phrase "the gate dielectric layer" in Line 2 should read "the organic gate dielectric layer". Appropriate correction has been made.

Claim 9 is objected to because the Examiner believes that the phrase "the insulating material" in Line 2 should read "the organic insulating material". Appropriate correction has been made.

Claim 22 is objected to because the Examiner believes that the phrase "the zone" in Line 3 should read "a zone". Appropriate correction has been made.

Claim 23 is objected to because the Examiner believes that the phrase "the zone" bridging Lines 2-3 should read "a zone". Appropriate correction has been made.

Claim 24 is objected to because the Examiner believes that the phrase "the zone" bridging Lines 2-3 should read "a zone". Appropriate correction has been made.

Claim 26 is objected to because the Examiner believes that the phrase "the bias voltage" in Line 2 and Line 3 should read "a bias voltage". Appropriate correction has been made.

Claim 27 is objected to because the Examiner believes that the phrase "the bias voltage" in Line 2 and bridging Lines 2-3 should read "a bias voltage". Appropriate correction has been made.

Claim Rejections - 35 USC § 101

Claims 28, 34 and 36 are rejected under 35 U.S.C. 101 because the claimed recitation of a use/process, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. This rejection is moot in view of the cancellation of the rejected claims.

Claim Rejections - 35 USC § 112

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner notes that the parenthetical "(EAsemicond.- 2eV)" in Lines 5-6 makes it "unclear whether the Applicant is claiming that the electron affinity of the organic semiconductor layer is -2 eV or can be other values." The parentheses have been removed.

Claims 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner states that "language of "wherein the [organic] insulating material does not containing a repeat unit or a residue unit comprising..." is ambiguous to the point of indefiniteness." Appropriate correction has been made.

Additionally, the language of "residue unit" is considered to be unclear. The language has been removed.

Finally, the recitations of "aromatic —OH," "aromatic —SH" and "aromatic —COOH" are unclear. Appropriate correction has been made.

Claims 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner states that the limitation "the insulating layer" has an insufficient antecedent basis in the claim. Appropriate correction has been made.

Claims 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner states that there is insufficient antecedent basis for "the zone of the organic semiconductive layer from which the light is emitted". Appropriate correction has been made.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite . This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner states that the limitation "a reactive electron affinity greater than or equal to (E_{As}semicond.-2eV)" in Lines 5-6 uses parentheses. The parentheses have been removed.

Claims 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner states that there is insufficient antecedent basis for "the bias voltage applied to a control electrode", "the bias voltage applied to the hole injecting electrode and that applied to the electron injection electrode", "the recombination zone", and "the channel of the transistor". Appropriate correction has been made.

Additionally, the word "that" (see Line 4 of Claim 26) is changed to "a bias voltage."

Claims 29-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner states that there is insufficient antecedent basis for "the step of defining" in Line 1 of each claim. Appropriate correction has been made.

Claim Rejections - 35 USC § 102

Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (280).

This rejection is traversed for at least the following reasons.

Amended Claim 22

Amended claim 1 is directed to an "ambipolar, light emitting transistor" having an organic semiconductive layer in contact with electrodes. Clearly, the claim requires a transistor structure that emits light.

Hayashi

The Examiner asserts that "Hayashi teaches an ambipolar (see Figures and Para. 0113 teaching that the charge carriers include both holes and electrons) light-emitting transistor including an organic semiconductive layer (Element 1; Para. 0113-0134 all describe this organic semiconductive layer) in contact with an electron injection electrode (cathode, see Element 3) and a hole injection electrode (anode, see Element 5). The foregoing analysis is fundamental to the Examiner's present rejection and to the *prima facie* case for obviousness stated subsequently.

As is clear from the following discussion, the analysis is not correct technically, as it is based upon an erroneous assumption.

Light Emitting Device is not a Transistor

The Examiner has made particular reference to sections [0113] to [0134] of Hayashi, but Applicants respectfully submit that these sections describe the semiconducting layer for a standard (i.e. non-transistor) light-emitting device for use *in combination with* a separate transistor, as shown in Figures 30 and 31 of Hayashi. In particular, the elements 3 and 5 that the Examiner identifies as anode and cathode are shown in Figure 31 as parts of a light-emitting device 40 that is connected to separate transistors 183 and 184. They are not integrated in the manner claimed. Applicants submit that there is no teaching or suggestion that the light-emitting device 40 might itself be a transistor.

In the absence of a literal reading of the claim on the prior art, there can be no anticipation.

Claim Rejections - 35 USC § 103

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (280). This rejection is traversed for at least the following reasons.

In framing the rejection, the Examiner repeats the reference in Hayashi to para. 0113-0134 for the description of an organic semiconductive layer in contact with an electron injection electrode (cathode, see Element 3) and a hole injection electrode (anode, see Element 5) and asserts that the limitation "from which the light is emitted is located more than [1 or 5] micron[s] away from both the electron as well as the hole injecting electrode" is not taught but would be obvious.

As already pointed out, the fundamental feature of the invention, namely that the light emitting device itself is a transistor, is not taught in Hayashi. Moreover, there is no teaching or suggestion that would lead one skilled in this art to modify Hayashi in order to reach the claimed invention.

Claims 1-21 and 25-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (280) in view of Kelley (472). This rejection is traversed for at least the following reasons.

First, as to claims 28, 34 and 36, the rejection is moot in view of their cancellation.

Amended Claim 1

Claim 1 has been amended to remove any indefiniteness and to emphasize the organic structures that are involved in the claimed transistor.

Hayashi

In framing the rejection of claims 1, 25 and 35, the Examiner repeats the analysis of Hayashi presented for claim 22 and looks to Element 1; Para. 0113-0134 for an organic semiconductive layer and Element 2; Para. 0139-0140 for an organic gate dielectric layer forming an interface with the organic semiconductive layer. Applicants already have demonstrated that Hayashi does not teach a transistor, as claimed.

Regarding the language of "that is capable of emitting light when operated in a biasing regime in which negative electrons are injected from an electron-injecting electrode into the organic semiconductive layer, and positive holes are injected from a hole-injecting electrode into the organic semiconductive layer", the Examiner considers this to be a recitation of the intended use of the claimed invention. Applicants have amended the claim to recite the various operations of the device affirmatively and not as a capability.

Regarding the recitation of "characterized in that", the Examiner asserts that "such language does not limit what the organic gate dielectric layer actually comprises, but merely states how it is characterized." The European style phrase has been changed to a conventional US type limitation that structurally limits the claim.

Kelley

The Examiner admits that Hayashi has no explicit teaching of the material used in spin coating. The Examiner looks to Kelley solely for a teaching of using "polysiloxanes, such as poly(dimethylsiloxane) and poly(dimethylsiloxane-co-diphenylsiloxane) (see Para. 0038) as an organic gate insulating material that interfaces with an organic semiconductor."

Claims 2-15

These claims would be patentable at least because of their dependence from allowable claim 1.

Claims 16-21

These claims also would be allowable because of their dependence from amended claim 1. Moreover, they would be patentable because of the added structural limitations that they present.

The Examiner asserts as to these claims that "the manner in which these claims are written do not further limit the scope of the claimed structure of the device because claim 1 fails to recite that the claimed structure comprises the electron injecting electrode and hole injecting electrode. As such, these claims merely recite more detail concerning the intended use of the device.

Applicants respectfully submit that the Examiner has misunderstood the claims or has misapplied the law. These claims recite structure and further limit the structure of the parent

claims. If the Examiner has alternative language that would remedy some perceived ambiguity, a suggestion from the Examiner would be appreciated.

Claims 25-27, 29-33 and 35

These claims would be patentable at least because of their dependence from allowable claim 1.

Double Patenting

Claims 1-36 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of copending Application No.

10/586,149. This rejection is traversed on the basis of the accompanying Terminal Disclaimer.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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23373

CUSTOMER NUMBER

Date: May 11, 2010

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